GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station

**PROJECT INITIATION**

Date: Dec. 6, 1968

Project Title: Laboratory Evaluation of Traffic Paints

Project No.: A-1098

Project Director: W. R. Tooke

Sponsor: Freeport Kaolin Company

Effective 11-21-68 Estimated to run until: Open

Type Agreement: Letter/Proposal dated 4-25-68 Amount: $ 850 max/task

Reports: As necessary

Contact Person: Mr. Lamar F. Brooks
Freeport Kaolin Co.
Gordon, Georgia 31031

Assigned to CSMD Division

COPIES TO:

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RA-62(12-66)

GEORGIA INSTITUTE OF TECHNOLOGY
EXPERIMENT STATION 225 North Avenue, Northwest · Atlanta, Georgia 30332

May 9, 1969





Freeport Kaolin Company
Gordon, Georgia

Attention: Mr. Lamar Brooks

Subject: Progress Report No. 1, Project A-1098
Laboratory Evaluation of Traffic Paints
Covering the period November 21, 1968 through April 30, 1969

Gentlemen:

A series of four traffic paints labeled D, J, M, and G have been subjected to evaluation on the Accelerated Wear Machine in accordance with the schedule detailed in the Project Work Statement.

Copies of original data sheets and sets of photographs have been forwarded to you previously. We are enclosing with this Report Tables I and II, which summarize all of the data, and Figures 1 and 2 which provide plots of average Integrity and Reflectance of each paint as a function of exposure time.

We would affirm a judgement that this set of paints exhibits a very significant range of performance in both Integrity and Reflectance, (i.e., differences are "real") and believe that this could be demonstrated quantitatively by analytical methods.

Yours very truly,

[redacted]

W. R. Tooke, Jr.,
Project Director

Approved:

[redacted]

Frederick Bellinger
Chief, Chemical Sciences and Materials Division

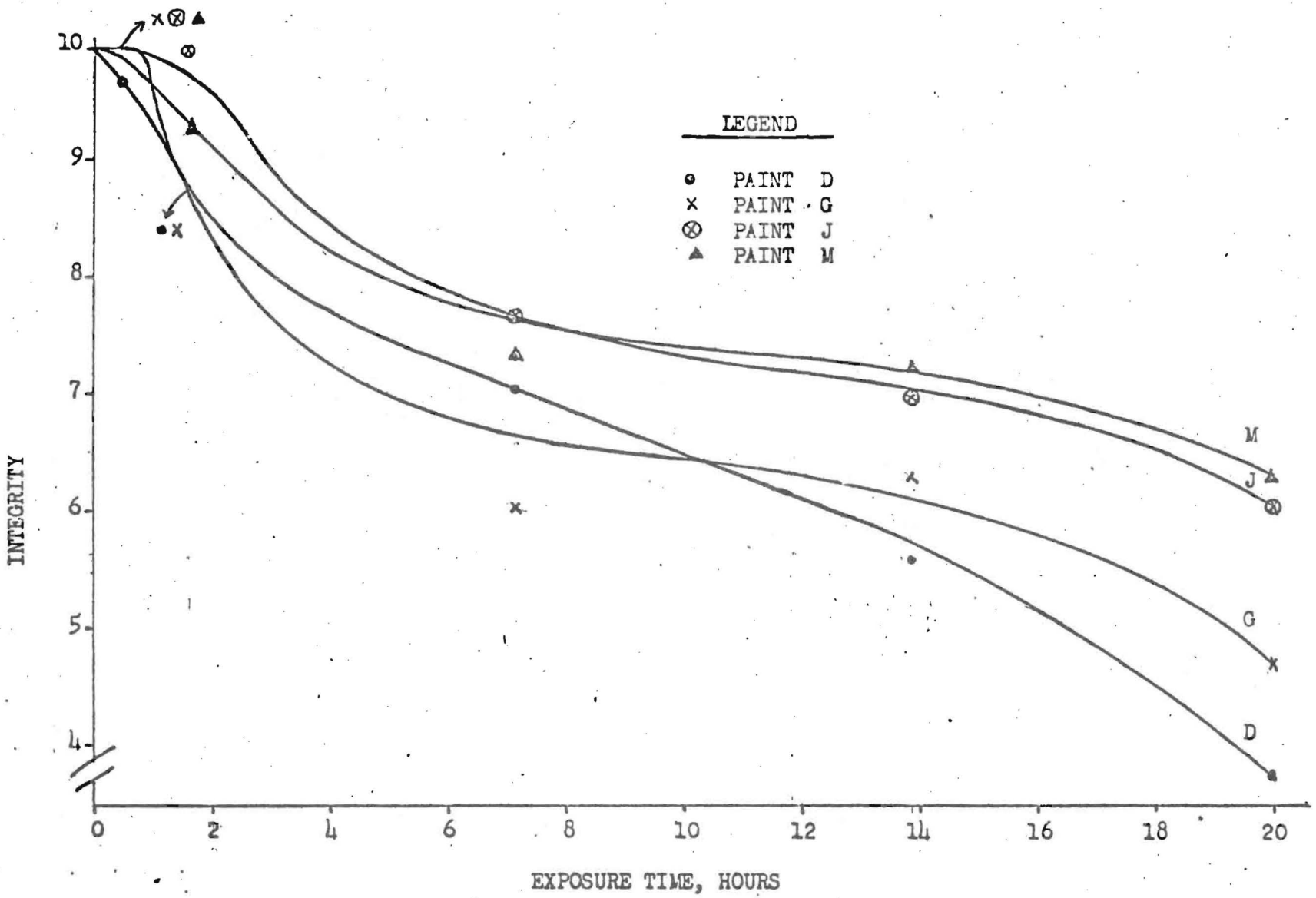


FIGURE 1, Integrity of traffic paint verses time, averaged over 10, 15, and 20 mil thicknesses.

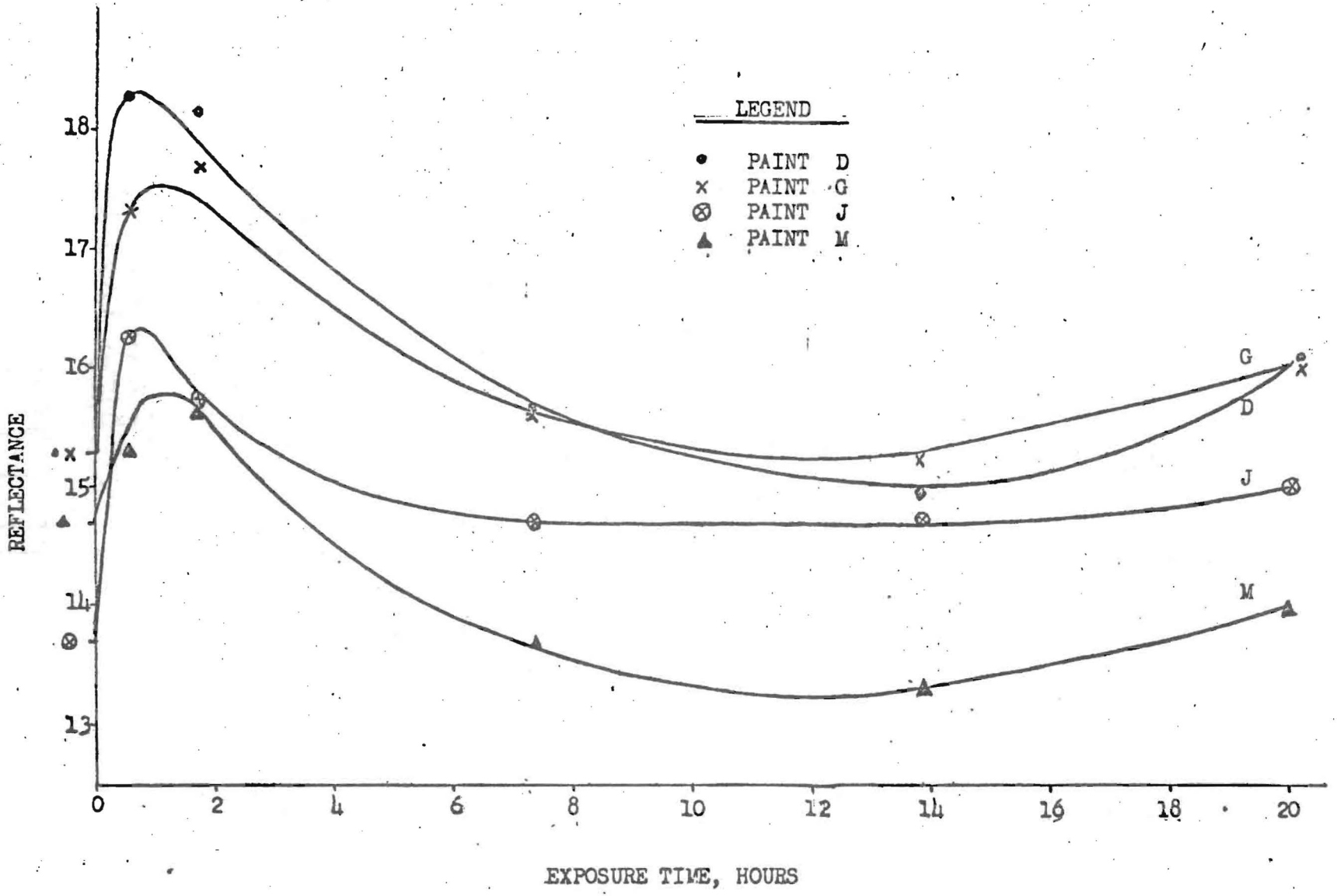


FIGURE 2. Reflectance of traffic paint verses time, averaged over 10, 15, and 20 mil thicknesses.

TABLE I

INTEGRITY OF BEADED PAINTS AS A FUNCTION OF TIME, AVERAGED OVER 10, 15, AND 20 MIL THICKNESS

| Nominal Thickness (mils) | Time (hours) | Integrity | | | |
|---|---|---|---|---|---|
| | | Paint D | Paint J | Paint M | Paint G |
| 10 | 0 | 10 | 10 | 10 | 10 |
| 15 | 0 | 10 | 10 | 10 | 10 |
| 20 | 0 | 10 | 10 | 10 | 10 |
| mean | 0 | 10 | 10 | 10 | 10 |
| 10 | .25 | 10 | 10 | 10 | 10 |
| 15 | .25 | 10 | 10 | 10 | 10 |
| 20 | .25 | 9 | 10 | 10 | 10 |
| mean | .25 | 9.7 | 10 | 10 | 10 |
| 10 | .50 | 10 | 10 | 10 | 10 |
| 15 | .50 | 10 | 10 | 10 | 10 |
| 20 | .50 | 9 | 10 | 10 | 10 |
| mean | .50 | 9.7 | 10 | 10 | 10 |
| 10 | .75 | 10 | 10 | 10 | 10 |
| 15 | .75 | 10 | 10 | 10 | 10 |
| 20 | .75 | 9 | 10 | 10 | 10 |
| mean | .75 | 9.7 | 10 | 10 | 10 |
| 10 | 1.65 | 8 | 10 | 9 | 8 |
| 15 | 1.65 | 9 | 10 | 10 | 9 |
| 20 | 1.65 | 9 | 10 | 9 | 9 |
| mean | 1.65 | 8.7 | 10 | 9.3 | 8.7 |
| 10 | 7.2 | 5 | 5 | 5 | 4 |
| 15 | 7.2 | 7 | 9 | 9 | 6 |
| 20 | 7.2 | 9 | 9 | 8 | 8 |
| mean | 7.2 | 7 | 7.7 | 7.3 | 6 |
| 10 | 13.9 | 4 | 5 | 5 | 5 |
| 15 | 13.9 | 7 | 8 | 9 | 6 |
| 20 | 13.9 | 6 | 8 | 8 | 8 |
| mean | 13.9 | 5.7 | 7 | 7.3 | 6.3 |
| 10 | 21.4 | 2 | 2 | 3 | 2 |
| 15 | 21.4 | 5 | 8 | 8 | 6 |
| 20 | 21.4 | 4 | 8 | 8 | 6 |
| mean | 21.4 | 3.7 | 6 | 6.3 | 4.7 |

TABLE II

REFLECTANCE OF BEADED PAINTS AS A FUNCTION OF TIME, AVERAGED OVER 10, 15, AND 20 MIL THICKNESS

| Nominal Thickness (mils) | Time (hours) | Reflectance | | | |
|---|---|---|---|---|---|
| | | Paint D | Paint J | Paint M | Paint G |
| 10 | 0 | 13 | 12 | 12 | 13 |
| 15 | 0 | 13 | 13 | 15 | 17 |
| 20 | 0 | 20 | 16 | 17 | 16 |
| mean | 0 | 15.3 | 13.7 | 14.7 | 15.3 |
| 10 | .25 | 16 | 14 | 15 | 18 |
| 15 | .25 | 19 | 17 | 15 | 16 |
| 20 | .25 | 19 | 15 | 16 | 16 |
| mean | .25 | 18 | 15.3 | 15.7 | 16.7 |
| 10 | .50 | 17 | 16 | 16 | 20 |
| 15 | .50 | 20 | 18 | 14 | 16 |
| 20 | .50 | 18 | 15 | 16 | 16 |
| mean | .50 | 18.3 | 16.3 | 15.3 | 17.3 |
| 10 | .75 | 16 | 15 | 16 | 20 |
| 15 | .75 | 20 | 17 | 15 | 15 |
| 20 | .75 | 18 | 15 | 16 | 15 |
| mean | .75 | 18 | 15.7 | 15.7 | 16.7 |
| 10 | 1.65 | 17 | 15 | 16 | 20 |
| 15 | 1.65 | 19 | 18 | 15 | 17 |
| 20 | 1.65 | 19 | 14 | 16 | 16 |
| mean | 1.65 | 18.3 | 15.7 | 15.7 | 17.7 |
| 10 | 7.2 | 15 | 15 | 15 | 18 |
| 15 | 7.2 | 16 | 16 | 13 | 15 |
| 20 | 7.2 | 16 | 13 | 13 | 14 |
| mean | 7.2 | 15.7 | 14.7 | 13.7 | 15.7 |
| 10 | 13.9 | 16 | 15 | 14 | 17 |
| 15 | 13.9 | 14 | 16 | 13 | 15 |
| 20 | 13.9 | 15 | 13 | 13 | 14 |
| mean | 13.9 | 15 | 14.7 | 13.3 | 15.3 |
| 10 | 21.4 | 16 | 15 | 14 | 17 |
| 15 | 21.4 | 15 | 16 | 14 | 16 |
| 20 | 21.4 | 17 | 14 | 14 | 15 |
| mean | 21.4 | 16 | 15 | 14 | 16 |

ENGINEERING
GEORGIA INSTITUTE OF TECHNOLOGY
EXPERIMENT STATION

225 North Avenue, Northwest · Atlanta, Georgia 30332

July 9, 1969



Freeport Kaolin Company
Gordon, Georgia

Attention: Mr. Lamar Brooks

Subject: Progress Report No. 2, Project A-1098
Laboratory Evaluation of Traffic Paints
Covering the period May, 1969 through June, 1969

Gentlemen:

A second series of four traffic paints labeled A, B, C, and E have been subjected to evaluation on the Accelerated Wear Machine in accordance with the schedule detailed in the Project Work Statement.

We are enclosing with this report Tables I and II, which summarize all of the data and Figures 1 and 2 which provide plots of average Integrity and Reflectance of each paint as a function of exposure time.

The initial reflectance of Paint A was significantly higher than Paints B, C, and E, and the final integrity of Paint E was significantly lower than paints A, B, and C. Other differences appear to be well within the range of experimental error.

Yours very truly,

[redacted]

W. R. Tooke, Jr.
Project Director

Approved:

[redacted]

Frederick Bellinger
Chief, Chemical Sciences and Materials Division

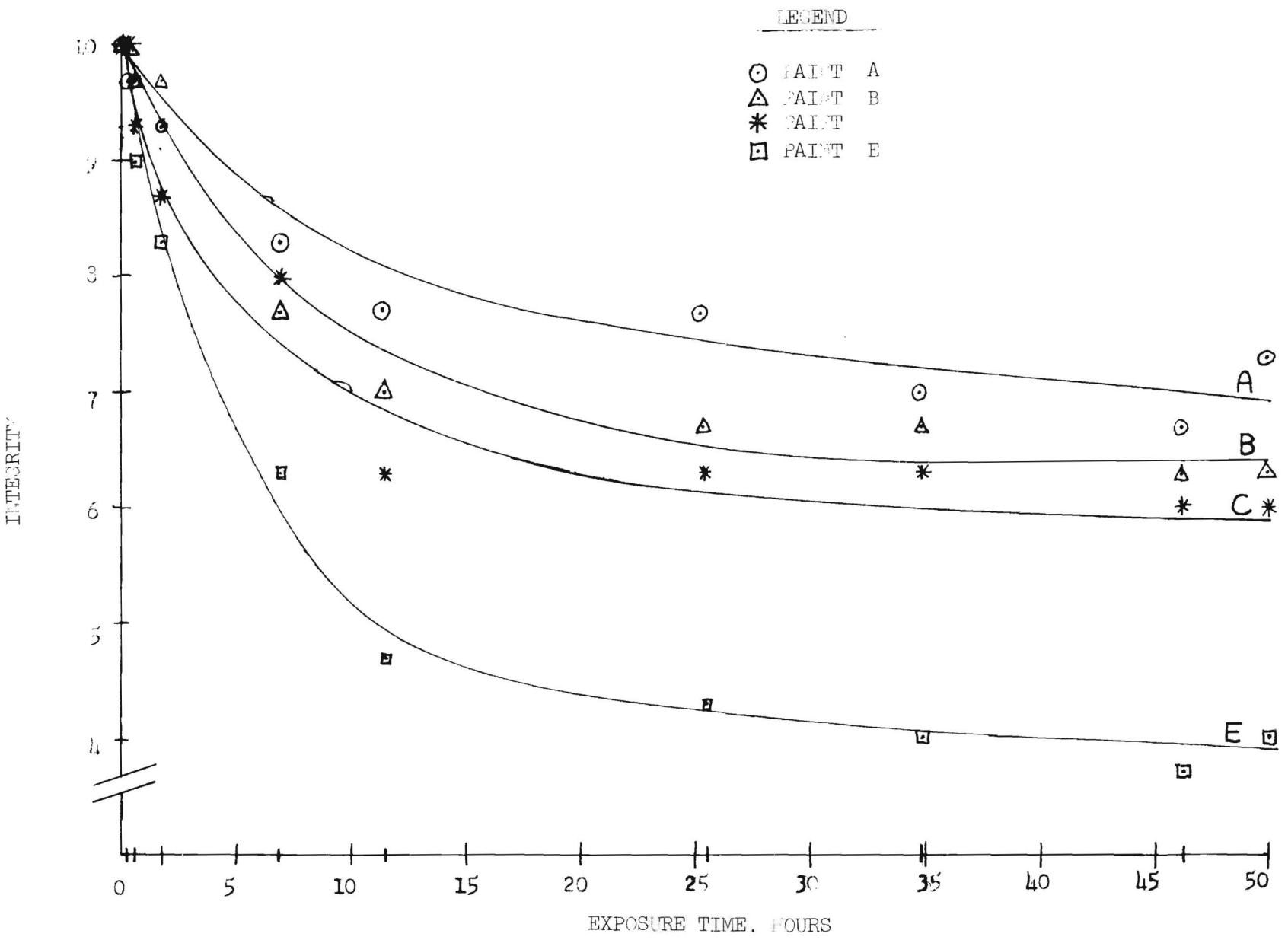


FIGURE 1, Integrity of traffic paint versus time, averaged over 10, 15, and 20 mil thicknesses.

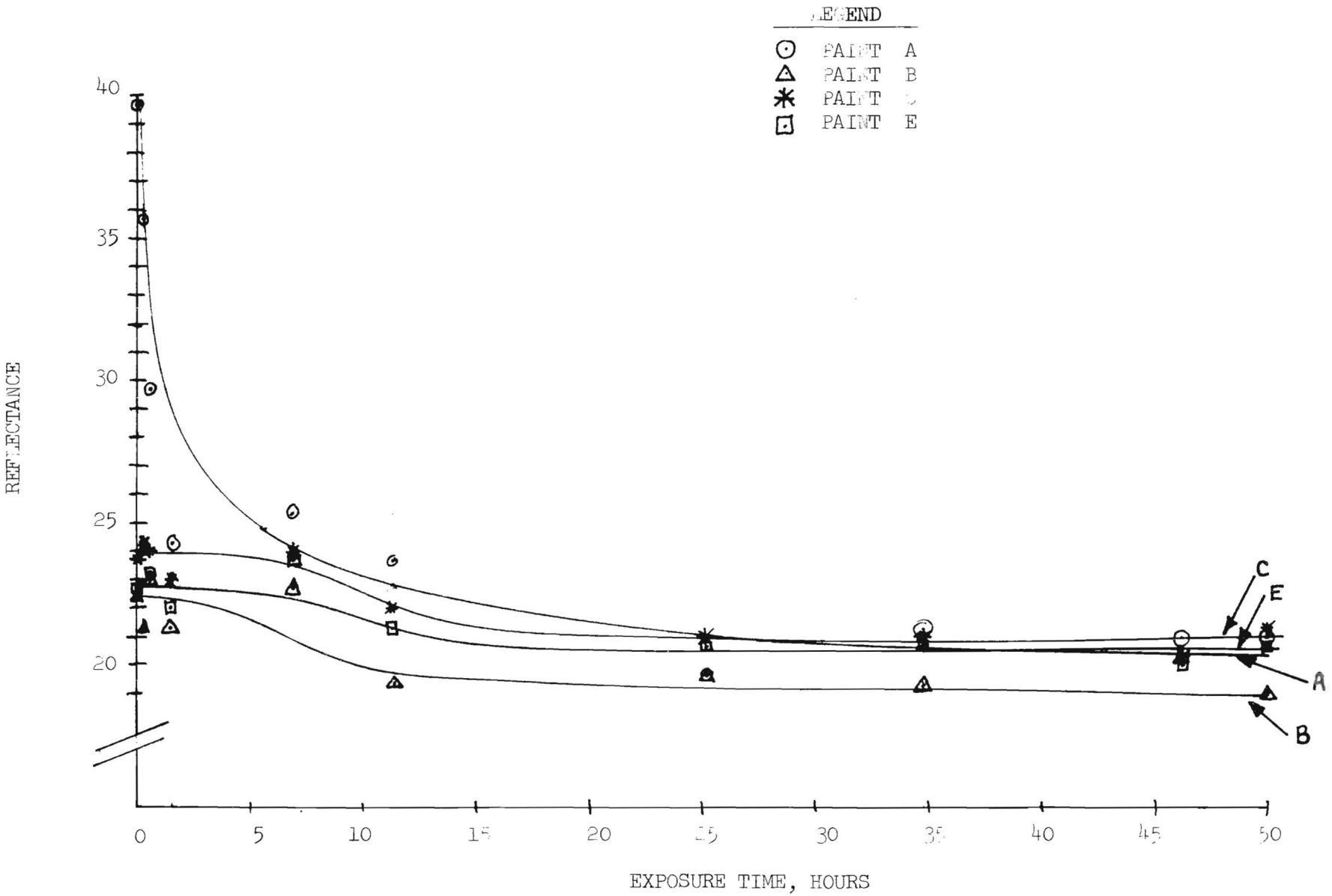


FIGURE 2, Reflectance of traffic paint verses time, averaged over 10, 15, and 20 mil thicknesses.

TABLE I

INTEGRITY OF BEADED PAINTS AS A FUNCTION OF TIME, AVERAGED OVER 10, 15, AND 20 MIL THICKNESS

| Nominal Thickness (mils) | Time (hours) | Integrity | | | |
|---|---|---|---|---|---|
| | | Paint A | Paint B | Paint C | Paint E |
| 10 | 0 | 10 | 10 | 10 | 10 |
| 15 | 0 | 10 | 10 | 10 | 10 |
| 20 | 0 | 10 | 10 | 10 | 10 |
| mean | 0 | 10 | 10 | 10 | 10 |
| 10 | 0.2 | 9 | 10 | 10 | 10 |
| 15 | 0.2 | 10 | 10 | 10 | 10 |
| 20 | 0.2 | 10 | 10 | 10 | 10 |
| mean | 0.2 | 9.7 | 10 | 10 | 10 |
| 10 | 0.5 | 9 | 10 | 10 | 10 |
| 15 | 0.5 | 10 | 10 | 9 | 9 |
| 20 | 0.5 | 10 | 9 | 9 | 8 |
| mean | 0.5 | 9.7 | 9.7 | 9.3 | 9 |
| 10 | 1.7 | 8 | 10 | 9 | 9 |
| 15 | 1.7 | 10 | 10 | 9 | 8 |
| 20 | 1.7 | 10 | 9 | 8 | 8 |
| mean | 1.7 | 9.3 | 9.7 | 8.7 | 8.3 |
| 10 | 6.9 | 9 | 6 | 8 | 7 |
| 15 | 6.9 | 7 | 8 | 8 | 6 |
| 20 | 6.9 | 9 | 9 | 8 | 6 |
| mean | 6.9 | 8.3 | 7.7 | 8 | 6.3 |
| 10 | 11.4 | 8 | 6 | 8 | 6 |
| 15 | 11.4 | 7 | 8 | 5 | 4 |
| 20 | 11.4 | 8 | 7 | 6 | 5 |
| mean | 11.4 | 7.7 | 7.0 | 6.3 | 4.7 |
| 10 | 25.2 | 8 | 5 | 6 | 5 |
| 15 | 25.2 | 7 | 7 | 6 | 3 |
| 20 | 25.2 | 8 | 8 | 7 | 5 |
| mean | 25.2 | 7.7 | 6.7 | 6.3 | 4.3 |
| 10 | 34.9 | 7 | 6 | 7 | 4 |
| 15 | 34.9 | 6 | 6 | 6 | 3 |
| 20 | 34.9 | 8 | 8 | 6 | 5 |
| mean | 34.9 | 7 | 6.7 | 6.3 | 4 |

| Nominal Thickness (mils) | Time (hours) | Integrity | | | |
|---|---|---|---|---|---|
| | | Paint A | Paint B | Paint C | Paint E |
| 10 | 45.4 | 6 | 4 | 6 | 4 |
| 15 | 46.2 | 6 | 7 | 6 | 2 |
| 20 | 46.9 | 8 | 8 | 6 | 5 |
| mean | 46.2 | 6.7 | 6.3 | 6 | 3.7 |
| 10 | 50.0 | 7 | 4 | 7 | 5 |
| 15 | 50.0 | 7 | 7 | 6 | 2 |
| 20 | 50.0 | 8 | 8 | 5 | 5 |
| mean | 50.0 | 7.3 | 6.3 | 6 | 4 |

TABLE II

REFLECTANCE OF BEADED PAINTS AS A FUNCTION OF TIME, AVERAGED OVER 10, 15, AND 20 MIL THICKNESS

| Nominal Thickness (mils) | Time (hours) | Reflectance | | | |
|---|---|---|---|---|---|
| | | Paint A | Paint B | Paint C | Paint E |
| 10 | 0 | 64 | 21 | 18 | 22 |
| 15 | 0 | 25 | 26 | 26 | 25 |
| 20 | 0 | 30 | 20 | 27 | 21 |
| mean | 0 | 39.7 | 22.3 | 23.7 | 22.7 |
| 10 | .2 | 48 | 16 | 21 | 26 |
| 15 | .2 | 29 | 31 | 25 | 25 |
| 20 | .2 | 30 | 19 | 27 | 21 |
| mean | .2 | 35.7 | 21.3 | 24.3 | 24 |
| 10 | .5 | 34 | 22 | 18 | 22 |
| 15 | .5 | 24 | 27 | 25 | 26 |
| 20 | .5 | 31 | 20 | 29 | 22 |
| mean | .5 | 29.7 | 23 | 24 | 23.3 |
| 10 | 1.7 | 22 | 22 | 18 | 22 |
| 15 | 1.7 | 24 | 25 | 25 | 24 |
| 20 | 1.7 | 27 | 17 | 26 | 20 |
| mean | 1.7 | 24.3 | 21.3 | 23 | 22 |
| 10 | 6.9 | 21 | 23 | 19 | 24 |
| 15 | 6.9 | 25 | 26 | 26 | 25 |
| 20 | 6.9 | 30 | 19 | 27 | 22 |
| mean | 6.9 | 25.3 | 22.7 | 24 | 23.7 |
| 10 | 11.4 | 19 | 20 | 16 | 19 |
| 15 | 11.4 | 20 | 21 | 27 | 24 |
| 20 | 11.4 | 29 | 18 | 26 | 21 |
| mean | 11.4 | 22.7 | 19.7 | 22 | 21.3 |
| 10 | 25.2 | 17 | 19 | 16 | 20 |
| 15 | 25.2 | 21 | 22 | 23 | 22 |
| 20 | 25.2 | 21 | 18 | 24 | 20 |
| mean | 25.2 | 19.6 | 19.6 | 21 | 20.7 |
| 10 | 34.9 | 17 | 20 | 17 | 20 |
| 15 | 34.9 | 22 | 22 | 23 | 23 |
| 20 | 34.9 | 25 | 16 | 23 | 19 |
| mean | 34.9 | 21.3 | 19.3 | 21 | 20.7 |

| Nominal Thickness (mils) | Time (hours) | Reflectance | | | |
|---|---|---|---|---|---|
| | | Paint A | Paint B | Paint C | Paint E |
| 10 | 45.4 | 17 | 20 | 18 | 21 |
| 15 | 46.2 | 22 | 24 | 21 | 21 |
| 20 | 46.9 | 24 | 17 | 22 | 18 |
| mean | 46.2 | 21 | 20.3 | 20.3 | 20 |
| 10 | 50.0 | 16 | 19 | 16 | 19 |
| 15 | 50.0 | 20 | 20 | 24 | 23 |
| 20 | 50.0 | 27 | 18 | 24 | 20 |
| mean | 50.0 | 21 | 19 | 21.3 | 20.7 |

GEORGIA INSTITUTE OF TECHNOLOGY
EXPERIMENT STATION 225 North Avenue, Northwest · Atlanta, Georgia 30332

November 24, 1969

Freeport Kaolin Company
Gordon, Georgia

Attention: Mr. Lamar Brooks

Subject: Completion of Weatherometer Studies - Project A-1093-001

Gentlemen:

On November 17, 1969, the series of painted wooden panels designated A, B, C, D, E, F, G and B II were removed from the weatherometer after an exposure period of 1600 hours, beginning on July 14. B II received 900 hours exposure.

A moderate level of fading and cracking is observable on most of the panels after this exposure. The panels are available in my office at your convenience, or we can ship them to you if desired.

Yours very truly,

[redacted]

W. R. Tooke, Jr.
Project Director

WRT:sm